

PTSA1210

Automotive SMD PTC fuses



Product features

- AEC-Q200 qualified
- Positive temperature coefficient (PTC)
- Surface mount resettable fuse
- Compact 1210 (3225 metric) footprint
- Low resistance
- Fast time-to-trip
- Current rating 0.50 A
- Voltage rating 13.2 V

Applications

- Infotainment
- In-vehicle navigation
- Telematics
- Car lighting
- Power window and seat control
- Instrument clusters
- PCB trace protection

Environmental compliance



Part number system/ordering:

PTSA121013V050

- PT= PTC resettable fuse
- S= Surface mount
- A= Automotive
- 1210= Dimension code
- 13V= Maximum voltage
- 050= Ihold current rating (050= 0.50 A)

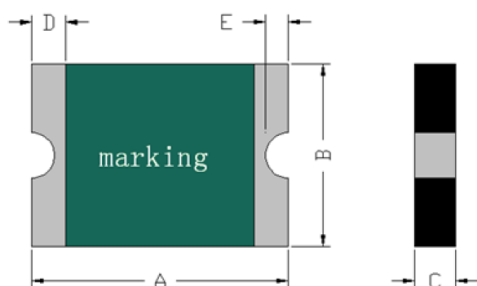
Product specifications

	V _{max} ¹	I _{max} ²	I _{hold} ³	I _{trip} ⁴	P _d ⁵	Time-to-trip (maximum)		Resistance ⁶		
Part number	(V _{dc})	(A)	(A)	(A)	typical (W)	(A)	(seconds)	Initial (R _i) minimum (Ω)	Post trip (R _p) maximum (Ω)	Part marking
PTSA121013V050	13.2	40	0.50	1.00	0.8	8.0	0.10	0.15	1.00	W4

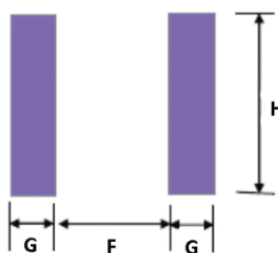
1. V_{max}: Maximum continuous voltage the device can withstand without damage at rated current
2. I_{max}: Maximum fault current the device can withstand without damage at rated voltage
3. I_{hold}: Maximum current the device will pass without interruption at +23 °C still air
4. I_{trip}: Minimum current that will transition the device from low resistance to high resistance at +23 °C still air
5. P_d: Power dissipated from the device when in tripped state at +23 °C still air

6. R_i: Minimum resistance of the device at +23 °C
R_p: Maximum resistance of the device one hour after tripping at +23 °C

Dimensions—mm



Recommended pad layout



Part number	A typ	A max	B typ	B max	C typ	C max	D min	E min	F	G	H
PTSA121013V050	3.25	3.43	2.50	2.80	0.60	0.85	0.25	0.10	2.0	1.0	2.5

Thermal derating chart - I_{hold} (A)

Part number	Maximum ambient temperature (°C)								
	-40	-20	0	25	40	50	60	70	85
PTSA121013V050	0.76	0.65	0.57	0.50	0.44	0.39	0.35	0.29	0.24

General specifications

Operating temperature: -40 °C to +85 °C (with derating)

Storage temperature: -10 °C to +40 °C

Storage relative humidity: ≤70%

Storage condition: Keep away from corrosive atmosphere and sunlight

Passive aging: IEC60738-1, +60 °C, 1000 hours, ≤ 20%
IEC60738-1, +85 °C, 1000 hours, ≤ 20%

Humidity aging: +85 °C, 85% RH, 100 hours, ≤ 20%

Thermal shock: IEC60738-1, +85 °C/ -40 °C, 20 cycles, ≤ 50%

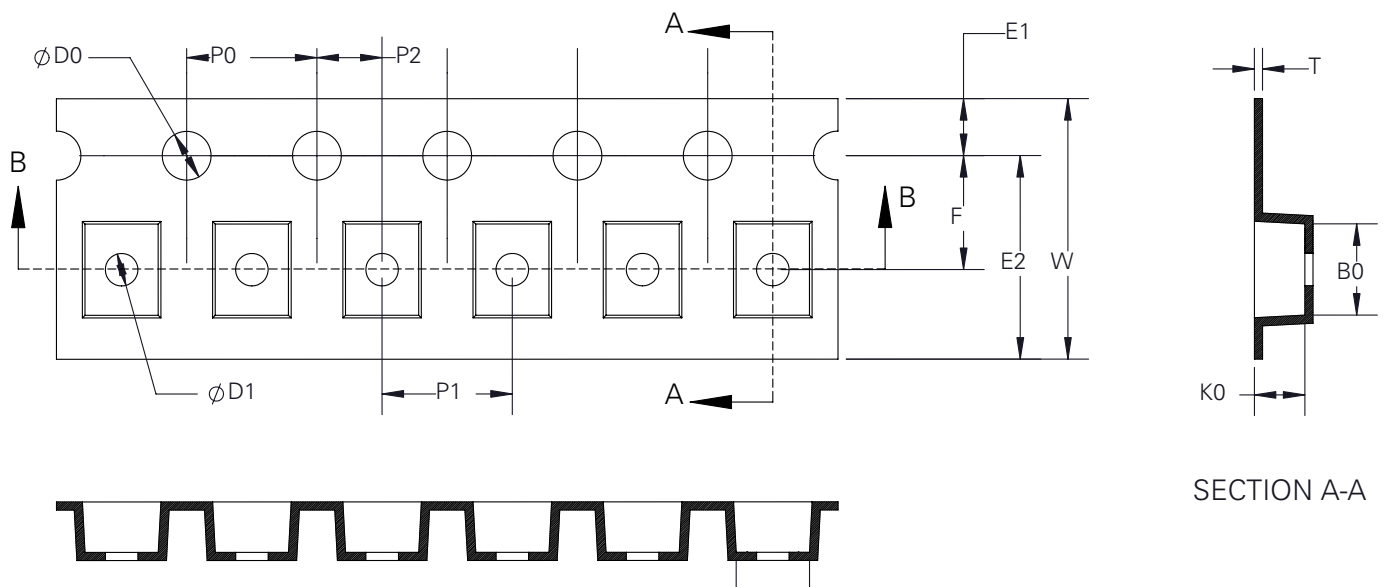
Trip cycle life: UL1434, Vmax, Imax, 100 cycles, no arcing or burning

Trip endurance: UL1434, Vmax, Itrip ≤ I, 2 hours, no arcing or burning

MSL test: J-STD-020, MSL=1, pass and no visible damage

Packaging information

Supplied in tape and reel packaging, 4000 parts per 7.0" (178 mm) diameter reel (EIA-481 compliant)



W	F	E1	E2	P0	P1	P2	D0	D1	A0	B0	K0	T
8.00 ± 0.30	3.50 ± 0.10	1.75 ± 0.10	-	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	1.55 ± 0.10/-0	-	2.82 ± 0.30	3.46 ± 0.30	1.25 ± 0.10	0.22 ± 0.05

Solder reflow profile

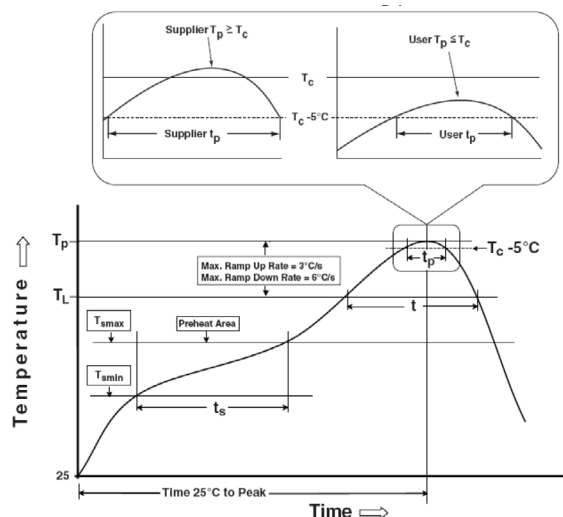


Table 1 - Standard SnPb solder (T_c)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) Free Solder (T_c)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T_{smin})	100 °C	150 °C
• Temperature max. (T_{smax})	150 °C	200 °C
• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Ramp up rate T_L to T_p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature (T_p)*	Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_c)	20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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